

## IN THE CLAIMS

1. (currently amended) An embedding method for embedding additional watermarking information into the data representing text information as a black and white binary document image, having the steps of:

detecting text image area; and

~~modifying the features of said text image area.~~

splitting said embedded text image area into two or more subblocks;

dividing said subblocks into two or more groups;

extracting features for respective groups;

modifying said features based on additional information;

embedding the features into said respective groups.

2. (currently amended) ~~A detecting method for detecting additional watermarking information embedded into a document image by the method according to claim 1, having the steps of:~~

~~detecting text image area; and~~

~~extracting the features from said text image area.~~

The method according to claim 1 wherein the step of embedding the features

into said respective groups is the step of embedding the features for said

respective groups to increase or decrease them to one phase or many

phases.

3. (currently amended) ~~The method according to Claim 1 wherein the feature comprises either one or a combination of, the number of black pixels, the transitive number of black and white pixels, occurrence frequency of any specific local pattern and average thickness of a line segment.~~

A detecting method for detecting additional watermarking information

embedded into the document image. having the steps of:

detecting text image area;

splitting said text image area into two or more subblocks;

dividing said subblocks into two or more groups;

detecting the features from respective groups;

detecting additional embedded information based on said features.

4. (currently amended) ~~The method according to claim 1 wherein the image area for embedding or detecting said additional watermarking information is a rectangle circumscribed around a text line.~~

The method according to claim 3 wherein the step of detecting additional embedded information based on the features is the step of detecting additional embedded information by integrating the features detected from said respective groups.

5. (currently amended) The method according to claim 1 for embedding additional watermarking information into the data representing text information as an image, having the steps of:

dividing said embedded text image area into two subblocks vertically and two or more subblocks horizontally;

dividing said subblocks into different physically located upper and physically located lower groups; and

modifying the features for respective groups to increase or decrease the features in one or more steps ~~them to one phase or many phases.~~

6. (currently amended) The method according to claim 1 for embedding additional watermarking information into the data representing text information as an image, having the steps of:

detecting text image area;

modifying the features of said text image area; and

embedding 1 or more bits of additional watermarking information into two or more lines.

7. (original) A detecting method for detecting additional watermarking information embedded into the document image by the method according to claim 6, having the step of detecting 1 or more bit of embedded additional watermarking information from two or more lines.

8. (currently amended) An embedding method for embedding additional watermarking information into the data representing text information as a black and white binary document image, having the steps of:

detecting text image area;

splitting said embedded text image area into two or more subblocks;

dividing said subblocks into two or more groups; and

modifying the features for respective groups to increase or decrease the features in one or more steps ~~them to one phase or many phases~~.

9. (original) A detecting method for detecting additional watermarking information embedded into the document image by the method according to claim 8, having the steps of:

detecting text image area;

splitting said text image area into two or more subblocks;

dividing said subblocks into two or more groups;

integrating the features detected from subblocks in respective groups; and

determining the value of said information by comparing the integrated values of said groups.

10. (original) The method according to claim 8 wherein the feature comprises either one or a combination of, the number of black pixels, the transitive number of black and white pixels, occurrence frequency of any specific local pattern and average thickness of a line segment.

11. (original) The method according to claim 8 wherein the image area for embedding or detecting said additional watermarking information is a rectangle circumscribed around a text line.

01 12. (currently amended) The embedding method according to claim 8 for embedding additional watermarking information into the data representing text information as an image, having the steps of:

dividing said embedded text image area into two subblocks vertically and two or more subblocks horizontally;

dividing said subblocks into different physically located upper and physically located lower groups; and

modifying the features for respective groups to increase or decrease the features in one or more steps ~~them to one phase or many phases~~.

13. (currently amended) The embedding method according to claim 8 for embedding additional watermarking information into the data representing text information as an image, having the steps of:

detecting text image area;

modifying the features of said text image area; and

embedding 1 or more bits of additional watermarking information into two or more lines.

14. (currently amended) A detecting method for detecting additional watermarking information embedded into the document image by the method according to claim 13, having the step of

detecting 1 or more bits of embedded additional watermarking information from two or more  
lines.

15. – 18. (cancelled)

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